

Enterotoxigenic *Escherichia coli* induce pro-inflammatory responses in porcine intestinal epithelial cells

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F4⁺ enterotoxigenic *Escherichia coli* (ETEC) cause severe diarrhoea in both neonatal and weaning piglets, resulting in morbidity and mortality. F4 fimbriae are a key virulence factor involved in the attachment of F4⁺ ETEC to the intestinal epithelium. Intestinal epithelial cells (IEC) are recently being recognized as important regulators of the intestinal immune system through the secretion of cytokines, however, data on how F4⁺ ETEC affect this cytokine secretion are scarce. By using ETEC strains expressing either polymeric, monomeric or F4 fimbriae with a reduced polymeric stability, we demonstrated that polymeric fimbriae are essential for the adhesion of ETEC to porcine IEC as well as for the secretion of IL-6 and IL-8 by ETEC-stimulated intestinal epithelial cells. Remarkably, this cytokine secretion was not abrogated following stimulation with an F4-negative strain. As this ETEC strain expresses flagellin, TLR5 mediated signalling could be involved. Indeed, porcine IEC express TLR5 and purified flagellin induced IL-6 and IL-8 secretion, indicating that, as for other pathogens, flagellin seems to be the dominant virulence factor involved in the induction of proinflammatory responses in IEC upon ETEC infection. These results indicate a potential mucosal adjuvant capacity of ETEC-derived flagellin and may improve rational vaccine design against F4⁺ ETEC infections.